

BIOCHEMICAL EVALUATION OF CONDITION AND METABOLISM
IN ATLANTIC CROAKER, *Micropogonias Undulatus* , Rebecca A.
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Abstract:

Effects of fish condition (fed verses starved), on metabolic rates, swimming performance, and energy production in red and white muscle tissue was evaluated in Atlantic croaker *Micropogonias undulatus*. Croaker were caught off the Delmarva Peninsula and held in two seperate holding tanks establishing fed and starved populations. Fed and starved fish underwent a swimming performance run to measure VO₂. Fed croaker oxygen consumption verses swimming speed suggested a bimodal swimming pattern. Fish began the swim run employing the use of pectoral fins (sculling) and continued in this labraform swimming pattern until carangiform swimming (mainly use of caudal fin) became more efficient (less energetically costly). The energy stores of the starved croaker were depleted to point that individuals were unable to perform in the swim run long enough to obtain sufficient data for a swimming pattern to be determined. Lack of nutrients results in white muscle degradation as glycogen (sugar) in muscle tissue and protein are degraded for energy use (Guderly et al. 2003). Red and white tissue samples were taken for analysis of pyruvate kinase, lactate dehydrogenase, and citrate synthase concentrations. The liver was weighed and retained for glycogen/lipid concentrations analysis. It is expected that upon evaluation of enzyme composition and glycogen/lipid concentrations in white muscle tissues of fed verses starved fish that the enzyme composition will be greatly lower in the starved tissues than that of fed. .

Works Cited

Guderley, H., D. Lapointe, M. Bedard, J.-D. Dutil (2003). Metabolic priorities during starvation: enzyme sparing in liver and white muscle of Atlantic cod, *Gadus morhua*. L. J. Comp. Biochem. Physiol. A 135:347-356.